ABB general machinery drives

Quick installation guide
ACS355 drives

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List of related manuals

Drive hardware manuals and guides	Code (English)
ACS355 drives user's manual	*3AUA0000066143*
ACS355 drives with IP66/67 / UL Type 4x enclosure supplement	*3AUA0000066066*
ACS355 Common DC application guide	*3AUA0000070130*

All manuals are available in PDF format on the Internet. See section *Document library on the Internet* on the inside of the back cover.

Quick installation guide – ACS355

About this guide

This guide contains the very basic information about the mechanical and electrical installation of the ACS355 drives: no options, degree of protection IP20 (cabinet installation) / UL open type, default macro in use. For complete documentation see *ACS355 drives user's manual* (code: 3AUA0000066143 [English]).

Safety instructions

WARNING! All electrical installation and maintenance work on the drive must be carried out by qualified electricians only.

Never work on the drive, the braking chopper circuit, the motor cable or the motor when input power is applied to the drive. After disconnecting the input power, always wait for 5 minutes to let the intermediate circuit capacitors discharge. Always ensure by measuring that no voltage is actually present.

A rotating permanent magnet motor can generate a dangerous voltage. Lock the motor shaft mechanically before connecting a permanent magnet motor to the drive, and before doing any work on a drive system connected to a permanent magnet motor.

Mechanical installation

In back mounting, fasten the drive to the wall with screws using four mounting holes. In side mounting with frame sizes R0…R2, fasten the drive to the wall with screws using three mounting holes. The drive can also be mounted onto a DIN rail.

Fasten the clamping plate to the plate at the bottom of the drive with the provided screws. For frame sizes R0…R2, fasten the I/O clamping plate to the clamping plate with the provided screws.

Free space requirements

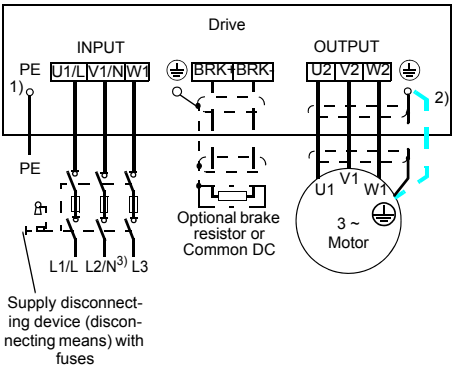
Frame size	Free space required					
	Above		Below		On the sides	
	mm	in	mm	in	mm	in
R0…R4	75	3	75	3	0	0

Note:

- When placing drives on top of each other in the panel or cabinet, make sure that the hot air from the drives below do not enter directly to the drive above.
- The maximum ambient air temperature is 50 °C (122 °F) at rated current. The current is derated for 40 to 50 °C (104 to 131 °F).

Installing the power cables

Connection diagram



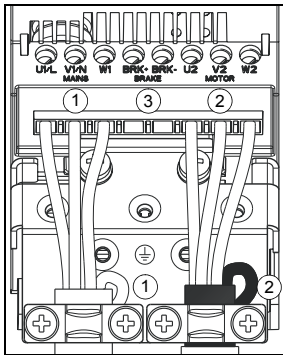
1) Ground the other end of the PE conductor at the distribution board.
2) Use a separate grounding cable if the conductivity of the cable shield is insufficient (smaller than the conductivity of the phase conductor) and there is no symmetrically constructed grounding conductor in the cable.
3) In one-phase installations, connect the neutral cable here.

Note:

- Do not use an asymmetrically constructed motor cable.
- Route the motor cable, input power cable and control cables separately.
- Make sure that the maximum cable lengths are not exceeded. For detailed information, see the user's manual.

Connection procedure

1. Strip the input power cable. Ground the bare shield of the cable (if any) 360 degrees under the grounding clamp. Fasten the grounding conductor (PE) of the input power cable under the screw of the grounding clamp. Connect the phase conductors to the U1, V1 and W1 terminals.
2. Strip the motor cable. Ground the bare shield of the cable 360 degrees under the grounding clamp. Twist the shield to form as short a pigtail as possible and fasten it under the screw of the grounding clamp. Connect the phase conductors to the U2, V2 and W2 terminals.
3. Connect the optional brake resistor to the BRK+ and BRK- terminals with a shielded cable using the same procedure as for the motor cable.
4. Secure the cables outside the drive mechanically.

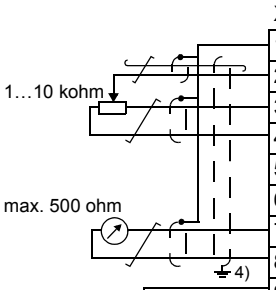


Frame size	Tightening torque N·m (lbf·in)	Max. wire size
R0…R2	0.8 (7)	4.0/6.0 mm^2 (10 AWG)
R3	1.7 (15)	10.0/16.0 mm^2 (6 AWG)
R4	2.5 (22)	25.0/35.0 mm^2 (2 AWG)

To identify the frame size of your drive, see *Fuses, losses and frame sizes*.

Installing the control cables

Default I/O connections



X1A

1	SCR	Signal cable shield (screen)
2	AI1	**Output frequency reference**: 0…10 V [1]
3	GND	Analog input circuit common
4	+10V	Reference voltage: +10 V DC, max. 10 mA
5	AI2	Not in use by default. 0…10 V
6	GND	Analog input circuit common
7	AO	**Output frequency value**: 0…20 mA
8	GND	Analog output circuit common
9	+24V	Auxiliary voltage output: +24 V DC, max. 200 mA
10	GND	Auxiliary voltage output common
11	DCOM	Digital input common
12	DI1	**Stop (0) / Start (1)**
13	DI2	**Forward (0) / Reverse (1)**
14	DI3	**Constant speed selection** [2]
15	DI4	**Constant speed selection** [2]
16	DI5	**Acceleration and deceleration selection** [3]

X1B

17	ROCOM	Relay output 1
18	RONC	**No fault [Fault (-1)]**
19	RONO	
20	DOSRC	Digital output, max. 100 mA
21	DOOUT	**No fault [Fault (-1)]**
22	DOGND	

X1C:STO

1	OUT1	STO (Safe torque off) connection
2	OUT2	
3	IN1	
4	IN2	

[1] AI1 is used as a speed reference if vector mode is selected.

[2] See parameter group 12 CONSTANT SPEEDS:

DI3	DI4	Operation (parameter)
0	0	Set speed through AI1
1	0	Speed 1 (1202)
0	1	Speed 2 (1203)
1	1	Speed 3 (1204)

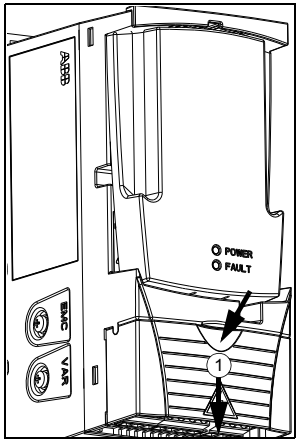
[3] 0 = ramp times according to parameters 2202 and 2203.

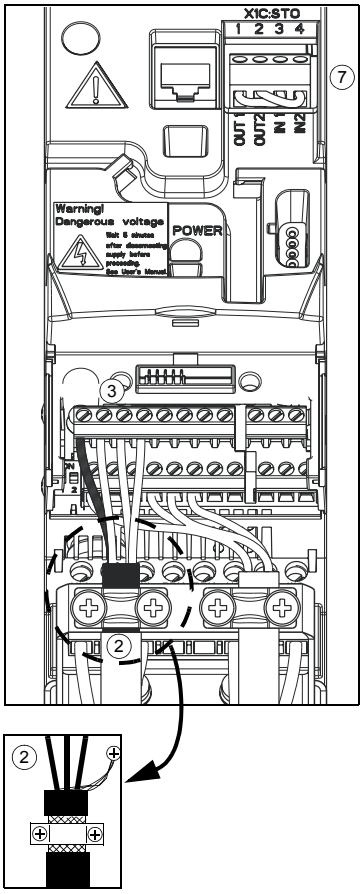
1 = ramp times according to parameters 2205 and 2206.

[4] 360 degree grounding under a clamp. Tightening torque = 0.4 N·m / 3.5 lbf·in.

Connection procedure

1. Remove the terminal cover by simultaneously pushing the recess and sliding the cover off the frame.
2. Strip the outer insulation of the analog signal cable and ground the bare shield 360 degrees under the clamp.
3. Connect the conductors to the appropriate terminals. Use a tightening torque of 0.4 N·m (3.5 lbf·in).
4. For double-shielded cables, twist also the grounding conductors of each pair in the cable together and connect the bundle to the SCR terminal (terminal 1).
5. Secure all cables outside the drive mechanically.
6. Unless you need to install the optional fieldbus module, slide the terminal cover back in place.
7. Connect STO conductors to the appropriate terminals. Use a tightening torque of 0.4 N·m (3.5 lbf·in).





Start-up

If the drive power rating matches to the motor power rating, the drive is ready to run. If any parameter tuning (acceleration and deceleration times, maximum and minimum speeds etc.) is required, see *ACS355 drives user's manual* (code: 3AUA0000066143 [English]) for further information.

Technical data

UL checklist

- The ACS355 drive is an IP20 (UL open or NEMA 1 type) drive to be used in a heated, indoor controlled environment. The drive must be installed in clean air according to enclosure classification. Cooling air must be clean, free from corrosive materials and electrically conductive dust. See *ACS355 drives user's manual* (code: 3AUA0000066143 [English]) for detailed specifications.
- The maximum ambient air temperature is 50 °C (122 °F) at rated current. The current is derated for 40 to 50 °C (104 to 131 °F).
- The drive is suitable for use in a circuit capable of delivering not more than 100 kA rms symmetrical amperes at the drive maximum rated voltage.
- The cables located within the motor circuit must be rated for at least 75 °C (167 °F) UL-compliant installations.
- The input cable must be protected with fuses or circuit breakers. Suitable IEC (class gG) and UL (class T) fuses are listed in the *Technical data* section of the user's manual.

  For installation in the United States, branch circuit protection must be provided in accordance with the National Electrical Code (NEC) and any applicable local codes. To fulfil this requirement, use the UL-classified fuses.

  For installation in Canada, branch circuit protection must be provided in accordance with Canadian Electrical Code and any applicable provincial codes. To fulfil this requirement, use the UL-classified fuses.
- The drive provides overload protection in accordance with the National Electrical Code (NEC).

Fuses, losses and frame sizes

Type ACS355 x = E/U	Fuses[1]		Heat dissipation		Air flow		Frame size
	gG	UL Class T (600 V)	Main circuit Rated /1N and /2N	Control circuit Max			
	A	A	W	W	m3/h	ft3/min	
1-phase UN = 200…240 V							
01x-02A4-2	10	10	25	22.7	-	-	R0
01x-04A7-2	16	20	46	26.4	24	14	R1
01x-06A7-2	16/20 [2]	25	71	26.4	24	14	R1
01x-07A5-2	20/25 [2]	30	73	27.5	21	12	R2
01x-09A8-2	25/35 [2]	35	96	27.5	21	12	R2
3-phase UN = 200…240 V							
03x-02A4-2	10	10	19	22.7	-	-	R0
03x-03A5-2	10	10	31	22.7	-	-	R0
03x-04A7-2	10	15	38	26.4	24	14	R1
03x-06A7-2	16	15	60	26.4	24	14	R1
03x-07A5-2	16	15	62	26.4	21	12	R1
03x-09A8-2	16	20	83	27.5	21	12	R2
03x-13A3-2	25	30	112	27.5	52	31	R2
03x-17A6-2	25	35	152	27.5	52	31	R2
03x-24A4- 2	63	60	250	35.4	71	42	R3
03x-31A0-2	80	80	270	57.8	96	57	R4
03x-46A2-2	100	100	430	57.8	96	57	R4
3-phase UN = 380…480 V							
03x-01A2-4	10	10	11	24.4	-	-	R0
03x-01A9-4	10	10	16	24.4	-	-	R0
03x-02A4-4	10	10	21	28.7	13	8	R1
03x-03A3-4	10	10	31	28.7	13	8	R1
03x-04A1-4	16	15	40	28.7	13	8	R1
03x-05A6-4	16	15	61	28.7	19	11	R1
03x-07A3-4	16	20	74	32.7	24	14	R1
03x-08A8-4	20	25	94	32.7	24	14	R1
03x-12A5-4	25	30	130	31.2	52	31	R3
03x-15A6-4	35	35	173	31.2	52	31	R3
03x-23A1-4	50	50	266	35.4	71	42	R3
03x-31A0-4	80	80	350	57.8	96	57	R4
03x-38A0-4	100	100	440	57.8	96	57	R4
03x-44A0-4	100	100	530	57.8	96	57	R4

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[1] The rated fuse currents given in the table are the maximums for the mentioned fuse types for short-circuit protection of the input power cable. Check that the operating time of the fuse is below 0.5 seconds. If the 0.5 seconds operating time is exceeded with the gG or T fuses, ultra rapid (aR) fuses will in most cases reduce the operating time to an acceptable level. **Note:** Larger fuses must not be used when the input power cable is selected according to this table.

[2] If 50% overload capacity is needed, use the larger fuse alternative.

Further information

Product and service inquiries

Address any inquiries about the product to your local ABB representative, quoting the type designation and serial number of the unit in question. A listing of ABB sales, support and service contacts can be found by navigating to www.abb.com/drives and selecting *Sales, Support and Service network*.

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